Montréal, 7 to 18 July 2014

Agenda Item 2: Improving the safety and efficiency of international air navigation through enhanced meteorological service provision

2.2: Enhanced integrated meteorological information to support strategic, pre-tactical and tactical operational decision-making from 2018 (including ASBU Module B1-MET)

REGIONAL HAZARDOUS WEATHER CENTRES

(Presented by Australia)

SUMMARY
This paper supports the implementation of Regional Hazardous Weather Centres (RHWCs) for select en-route hazardous meteorological conditions consistent with the evolving Global Air Navigation Plan (Doc 9750). Action by the meeting is in paragraph 3.

1. INTRODUCTION

1.1 The ICAO Meteorology Divisional Meeting in 2002 (MET/02) recognised the need to look at the full implementation of SIGMET to ensure that hazardous weather information was readily available to users for all parts of the globe (MET/02 Recommendations 1/12 and 1/13 refer).

1.2 The ICAO Regional Planning and Implementation Groups (PIRGs) were tasked to conduct regional surveys to identify the deficiencies in the issuance of SIGMET messages. Deficiencies in some regions were identified for all SIGMET types, including those for volcanic ash and tropical cyclones where Advisory Centres were providing expert advice to the Meteorological Watch Offices (MWOs). Deficiencies included the lack of provision of SIGMET, incorrect SIGMET format and lack of consistency across Flight Information Region (FIR) boundaries. Despite extensive efforts by ICAO and WMO to assist States in addressing SIGMET-related deficiencies there is still no resolution to this long-standing issue.

1.3 The ICAO Meteorological Warnings Study Group (METWSG) conducted a trial of the Regional Hazardous Weather Advisory Centre (RHWAC) concept in the AFI region and parts of the Asia/Pacific (APAC) regions during 2011.

1.4 This paper supports the creation of Regional Hazardous Weather Centres (RHWCs) to provide an authoritative source of advice for aviation on specific hazards (replacing the current Advisory and SIGMET products) and presents Australia’s proposal to extend our current hazardous weather advice capability for tropical cyclones and volcanic ash to include phenomena such as turbulence, icing and mountain waves above FL100 and thunderstorms.

(4 pages)
2. DISCUSSION

2.1 There are significant and long-standing deficiencies relating to the provision of hazardous weather information, particularly in the APAC Region. It has been identified that there are many States that are unable to fully meet their obligations under Annex 3 – Meteorological Service for International Air Navigation. In particular, there are some developing APAC States that have difficulty with the provision of SIGMET, leading to Meteorological Watch Offices (MWOs) not being able to issue SIGMETs in a timely, reliable, or accurate manner.

2.2 It should be noted that hazardous weather phenomena are not constrained to a single FIR. Due to the lack of coordination across neighbouring FIRs, the current MWO concept leads to conflicting SIGMET information at and around these FIR boundaries.

2.3 The International Air Transport Association (IATA) and its member airlines have continued to express concern over the safety and efficiency of operations in areas where SIGMETs are rarely, if ever, issued by MWOs or are inconsistent across FIR boundaries. ICAO has also recognised that there is the increasing demand from international civil aviation users for efficient and effective phenomena-based hazardous meteorological condition information, seamlessly covering the globe in a coordinated and harmonised way as required by Block 1 - Aviation System Block Upgrade (ASBU) methodology intended to foster a “One Sky” concept for international air navigation.

2.4 IATA has also expressed concern over the duplication of effort and the inconsistencies between advisory products such as the Volcanic Ash Advisory (VAA) and the Tropical Cyclone Advisory (TCA) and the associated advice given in SIGMETs, noting that a single product would be preferable (in textual, graphical and digital form). It should also be noted that the ICAO Meteorology Divisional meeting in 2002 formulated Recommendation 1/13 regarding the ‘Upgrade of the volcanic ash advisory message to a “warning”’ and ‘That, ICAO seek the views of an appropriate group on the proposal to upgrade the status of the volcanic ash advisory to a “warning”. This is a longstanding problem that has not been resolved over the intervening 12 years between ICAO MET Divisional meetings.

2.5 A detailed strategy for the future provision of information on hazardous meteorological condition is outlined in MET/14-WP/6|CAeM-15/Doc. 6 Appendix B. The METWSG has proposed a strategy to transfer the issue of defined hazardous meteorological information to appropriately resourced regional centres, initially supported by respective MWOs, in a three phased approach as follows:

a) Phase 1 (2014-2017): The first phase is the establishment of regional hazardous weather advisory centres (RHWACs) to assist MWOs with the existing provision of SIGMET information in those ICAO Regions in need of such support.

b) Phase 2 (2016-2020): The second phase will cover the centralisation of SIGMET-related responsibilities of MWOs to regional hazardous weather centres (RHWCs) supporting multiple FIRs. This may include the amalgamation of existing volcanic ash advisory centres (VAACs) and tropical cyclone advisory centres (TCACs) into these RHWCs, and will include close liaison with users and detailed definition of all products to be supplied by the new centres.

c) Phase 3 (2020-2024): This phase primarily covers the review of the performance of the regional hazardous weather centres, making any appropriate recommendations in this regard. The review will also include an evaluation of the efficacy, or otherwise, of consolidating, in a further phase (potentially a Phase Four), hazardous
meteorological condition information issued from a few centres conjointly covering the globe, in or after 2025.

2.6 Australia currently hosts two regional centres, the Darwin Volcanic Ash Advisory Centre (VAAC) and Tropical Cyclone Advisory Centre (TCAC), which form part of an international agreement for the provision of hazardous weather in and outside Australia’s FIRs. Australia is in a good position to host a RHWC for additional phenomena such as turbulence, icing and mountain waves above FL100 and for thunderstorms, given that it has a robust quality management system, qualified meteorological staff with an aviation competency program in place, advanced modelling and forecasting systems and highly developed information and communications technology (ICT) systems and infrastructure.

2.7 Australia’s view is that Phase 1 of the strategy (MET/14-WP/6|CAeM-15/Doc.6 Appendix B refers) for the future provision of information on hazardous meteorological conditions is not required. The current advisory system for volcanic ash and tropical cyclones has been successful in providing expert information but has had limited success in ensuring that a completely global coverage of SIGMET is obtained. It is therefore proposed that Phase 2, covering the centralisation to RHWCs for the issuance on advice for hazardous meteorological conditions, including icing, turbulence and mountain waves above FL100 and for volcanic ash, tropical cyclones and thunderstorms, be implemented as soon as possible.

2.8 The establishment of RHWCs would also be a good opportunity to examine the areas of responsibility of the current and future centres to ensure that there is no duplication of effort over the same geographical area.

2.9 As per Appendix C of MET/14-WP/6|CAeM-15/Doc. 6, Australia also supports the objective of developing a plan for the future governance and equitable cost recovery for regional hazardous weather centres and recommends that the meeting should consider the establishment of a set of minimum services and capabilities for RHWCs to ensure the most effective and efficient service is provided to the aviation industry. These specifications and capabilities should include:

- Specification and standardisation of regional products & services;
- Product dissemination at the regional global level;
- Boundary consistency between neighbouring RHWCs;
- Implementation of a quality management system;
- Specification of required qualifications and competencies;
- 24/7 operations;
- User liaison and training;
- Cost recovery mechanisms;
- Post-event analysis, user feedback and forecast verification;
- IT, modelling and communication systems infrastructure;
- On-going research and development.

2.10 Under the approach recommended by Australia the MWOs would continue to play a major role in the services to aviation. This is particularly the case for en-route conditions below FL100 for hazardous weather conditions as currently defined by SIGMET and AIRMET and the provision of Area Forecasts (GAMET) for general aviation where detailed local knowledge is required. States will also continue to play a major role for the provision of services in the terminal area for existing services such as Meteorological Reports (METAR/SPECI), Landing Forecasts (TREND), Aerodrome Forecasts (TAF), Aerodrome Warnings (AD WRNG) and Wind Shear Alerts and Warnings (WS WRNG) and in the development of new services in the terminal area for seamless aviation operations during all phases of flight.
2.11 The meeting is invited to endorse the following recommendation:

**Recommendation 2/x — Regional Hazardous Weather Centres**

That:

a) the provision of information on hazardous meteorological conditions (icing, turbulence and mountain waves above FL100 and volcanic ash, tropical cyclones, thunderstorms) be provided through Regional Hazardous Weather Centres (RHWCs) as defined in phase 2 and 3 of MET/14-WP/6|CAeM-15/Doc. 6 Appendix B, with the exclusion of phase 1;

b) the areas of responsibility of regional centres be realigned to avoid duplication of forecasting effort by different centres over the same area;

c) a cost recovery mechanism and governance supporting RHWCs be established as defined in MET/14-WP/6|CAeM-15/Doc. 6 Appendix C; with a minimum set of specifications and capabilities including:

- specification and standardisation of regional products and services;
- product dissemination at the regional global level;
- boundary consistency between neighbouring RHWCs;
- implementation of a quality management system;
- specification of required qualifications and competencies;
- 24/7 operations;
- user liaison and training;
- cost recovery mechanisms;
- post-event analysis, user feedback and forecast verification;
- IT, modelling and communication systems infrastructure;
- on-going research and development.

d) the meeting support Australia’s proposal to host a RHWC as described in the strategy for the future provision of information on hazardous meteorological condition outlined in MET/14-WP/6|CAeM-15/Doc. 6 Appendix B.

3. **ACTION BY THE MEETING**

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) consider the adoption of the draft recommendation proposed for the meeting’s consideration.

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